VA QUERI
Quality Enhancement Research Initiative

Polytrauma and Blast-Related Injuries

Minneapolis, MN

QUERI Fact Sheet **June 2006**

QUERI currently focuses on ten conditions that are prevalent and high-risk among veteran patients: chronic heart failure, colorectal cancer, diabetes, HIV/Hepatitis, ischemic heart disease, mental health, polytrauma and blast-related injuries, spinal cord injury, stroke, and substance use disorders.

Polytrauma and Blast-Related Injuries

More than 18,000 service members have been wounded in action or killed in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). Thousands of those who were wounded suffered blast-related injuries. A blast injury is a biophysical and pathophysiological event, along with the clinical syndromes that occur when a living body is exposed to an explosion. In combat, sources of blast injury include artillery, rocket and mortar shells, mines, booby traps, aerial bombs, improvised explosive devices (IEDs), and rocket-propelled grenades. Blast injuries are often polytraumatic, meaning that they affect multiple body systems or organs.

Because of improvements in body armor, as well as in battle site and acute trauma care, service members from OIF and OEF are surviving beyond the acute phase of blast injuries. However, they are surviving with new and complex patterns of injuries including Traumatic Brain Injury (TBI), traumatic or partial limb amputation, nerve damage, burns, wounds, fractures, vestibular damage, vision and hearing loss, pain, mental health and adjustment problems. Information available to date suggests TBI is particularly common among OEF and OIF service members compared with those who sustained combat injuries in previous wars. For example, through January 2006 almost one third (more than 600) of service members with battlefield injuries severe enough to warrant evacuation from Iraq to the Walter Reed Army Medical Center had traumatic brain injury, and the majority of these cases were blast-related.

To meet the complex rehabilitation needs of severely injured service members, the VA has designated four Polytrauma Rehabilitation Centers (PRCs) to provide specialized rehabilitation treatment and expand clinical expertise in polytrauma and blast-related injuries throughout the VA. These Centers are co-located with the TBI Lead Centers at the Minneapolis, Tampa, Palo Alto, and Richmond VA Medical Centers, and build upon the clinical expertise and collaborative ties to the Department of Defense (DoD) that these teams have developed. Through December 2005, the Polytrauma Rehabilitation Centers provided inpatient rehabilitation treatment to 245 OEF and OIF service members with severe traumatic brain injury. The Centers also work closely with newly designated polytrauma specialty rehabilitation teams located in VA tertiary care facilities within each VISN. The PRCs, therefore, play a central role in defining and disseminating best practice for polytrauma and blast-related injuries.

PT/BRI Quality Enhancement Research Initiative

Funding for the Polytrauma and Blast-Related Injuries (PT/BRI) QUERI began in October 2005. The mission of the PT/BRI-QUERI is to promote the successful rehabilitation, psychological adjustment, and community re-integration of individuals who have experienced polytrauma and blast-related injuries. The scope of the research portfolio will include the range of health problems, health care system and psychosocial factors represented in this mission, including care structures and processes within the DoD, the VA, and the community, as well as the transfer of care within and across systems. Because polytrauma and blast-related injuries affect

The PT/BRI-QUERI Executive Committee

Each QUERI Executive Committee is co-chaired by a research expert and a clinician. The research coordinator for the PT/BRI-QUERI is **Nina Sayer, PhD,** and the clinical coordinators are **Barbara Sigford, MD, PhD,** and **Steven Scott, DO.** This Executive Committee brings together a diverse group of researchers, clinicians and leaders from the VA, the DoD, and consumer organizations committed to improving care for individuals with polytrauma and blast-related injuries. The PT/BRI-QUERI Executive Committee members include: Judith Babcock-Parziale, PhD; John Brown, MD; Adam Darkins, MD; **Greta Friedemann-Sanchez, PhD** (Implementation Research Coordinator); Robert Kerns, PhD; Laurent Lehmann, MD; Henry Lew, MD, PhD; Audrey Nelson, PhD, RN, FAAN; Paul Pasquina, MD, LTC, MC; Patricia Rossbach, RN; Robert Smith, EdD, MCP; and Deborah Warden, MD.

multiple body organs and systems, this research is not disease or problem-specific, and because family members play a crucial role in rehabilitation and chronic illness, the scope of the research also will include family members who fulfill caregiver roles.

However, the primary focus at this early stage is on the structures and processes of rehabilitation care being established within the four Polytrauma Rehabilitation Centers. Over time, the focus will include the full-range of settings where veterans with polytrauma and blast-related injuries receive care.

PT/BRI-QUERI Projects

In addition to the necessary breadth of its focus, the PT/BRI-QUERI faces a significant challenge in that there is a lack of well-established evidence from which to create clinical practice standards and against which to measure performance gaps. Put simply, the evidence-base and standard of care for the rehabilitation of individuals with multiple battlefield injuries is just emerging. The PT/BRI-QUERI will conduct the following projects to address this challenge.

Needs Assessments

PT/BRI investigators will conduct PRC team needs assessments on a regular basis. The initial assessment will involve separate qualitative and quantitative components in order to:

- Characterize the variations in care structures, care process, care coordination and outcomes across the four PRCs;
- Prioritize the medical, mental health, and psychosocial problems with which these severely injured patients struggle; and
- Identify obstacles that hinder and innovations or solutions that optimize patient and family/caregiver outcomes.

Over time, the PT/BRI-QUERI Needs Assessments will include other medical settings where individuals with polytraumatic and blast-related injuries receive care.

Data Systems Development

PT/BRI-QUERI is working to develop a clinical outcomes tracking system that will monitor rehabilitation care processes and outcomes. A separate registry of patients with polytrauma and blast-related injuries (e.g., TBI, amputations), who present to the VA for medical care, regardless of setting or injury-type, also will be developed. These products will have administrative, clinical, and research value.

Recently Funded Studies

PT/BRI investigators also are working on several recently funded studies that focus on topics such as: access to VA rehabilitation services for OEF/OIF veterans, treatment and costs of combat-related blast injuries, amputee prosthetic care for veterans, community reintegration for injured veterans, and life care planning techniques to assist the coordination of care for polytrauma victims of war and terrorism.

THE QUERI PROCESS

QUERI utilizes a six-step process to diagnose gaps in performance and identify and implement interventions to address them:

1) Identify high-risk/high volume diseases or problems;
2) Identify best practices;
3) Define existing practice patterns and outcomes across VA and current variation from best practices;
4) Identify and implement interventions to promote best practices;
5) Document that best practices improve outcomes; and
6) Document that outcomes are associated with improved health-related quality of life.

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